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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,535	07/29/2003	Wei Huang	490102001500	9253
25226	7590	07/26/2006	EXAMINER	
MORRISON & FOERSTER LLP 755 PAGE MILL RD PALO ALTO, CA 94304-1018			MALKOWSKI, KENNETH J	
			ART UNIT	PAPER NUMBER
			2613	

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/630,535	Applicant(s) HUANG ET AL.	
	Examiner Kenneth J. Malkowski	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-14 and 16-22 is/are rejected.
- 7) ☒ Claim(s) 6 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/29/2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/6/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Figure 1 does not show the "Prior Art" label needed for said figure. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 7-14, and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants Admitted Prior Art (hereinafter AAPA) in view of U.S. Patent No. 4,764,732 to Dion et al.

With respect to claims 1-2 and 12-14, AAPA discloses an optical receiver (figure 1)(page 3 paragraph 8 (receiver that receives light from a fiber using a photodetector)) comprising: a photosensitive device (D1, Fig 1)(page 3 paragraph 8 (phototransistor or photodiode)); and a plurality of series-connected amplifier stages coupled to the photosensitive device (A1-A4, Fig 1)(page 3 paragraph 8 (a series of amplifier stages)); wherein a first of the amplifier stages includes an amplifier (20, Fig 1) series-connected to an attenuator (P1, Fig 1), and a second of the amplifier stages includes: a second amplifier (A2, Fig 1); a second attenuator (P2, Fig 1); a third amplifier (A3, Fig 1); a third attenuator (P3, Fig 1). However AAPA fails to disclose a switch coupling one of the second and third amplifier or the second and third attenuator between the first and second amplifier stages and an output terminal of the optical receiver. Dion, from the same field of endeavor also discloses an optical receiver (column 1 lines 5-6) wherein a second amplifier is switch-able between two modes (column 1 lines 57-62) wherein a switch means switches an impedance in and out of the circuit (column 2 lines 7-10) in order to operate the amplifier in its first and second modes (column 2 lines 10-15). It is important to note that Dion teaches that said switching means can switch to reduce the second amplifier or to shut off the second amplifier completely while in the second mode (column 2 lines 37-44) effectively coupling a resistor while also de-coupling an amplifier. Therefore, it would have been obvious to one of ordinary skill in the art to replace the variable attenuators with the switching modes as taught by Dion into the second and third amplification stages as taught by AAPA at the time of invention, thereby connecting the control circuit (36, Fig 1) to the switching mechanism as taught by Dion

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instead of the variable attenuators. The motivation for doing so is suggested by AAPA in that it states that a more elaborate attenuation scheme was needed (AAPA: page 5 paragraph 15). Further motivation for implementation was provided by Dion, who, taught that having two switchable modes of operation improves the dynamic range of the receiver by obtaining optimum performance for both low power and high power (Dion: column 1 lines 47-52), which was the same advantage lacking in the prior art example provided by applicant as stated on page 3 paragraph 7, "What remains is the gain and attenuation approach to obtain optimum performance for both extreme (high and low) power conditions.

With respect to claim 3, AAPA in view of Dion disclose the receiver of claim 1, further comprising a control circuit (AAPA: 36, Fig 1)(Dion also discloses a control circuit, 74, Fig 2 used to coupled to switching means 70, 76 Fig 2 (column 4 lines 53-61)) coupled to a control terminal of each of the switches (second and third leads of control circuit 36 disclosed in AAPA are connected to switching mechanism as taught by Dion (21, Fig 1) through biasing input (23, Fig 1) shown connected to said switch as a result of the combination above).

With respect to claim 4, AAPA in view of Dion disclose the receiver of claim 3, wherein the control circuit (AAPA: 36, Fig 1)(Dion: AGC, Fig 2) has an input terminal coupled to the photosensitive device (AAPA: D1, Fig 1)(Dion: 10, Fig 2).

With respect to claims 5 and 20, AAPA in view of Dion disclose the receiver of claim 3, wherein the control circuit controls the switches responsive to the optical power received by the photosensitive device (Dion: column 5 lines 51-57 (power of signal

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received from light impinging upon diode is sensed by the AGC circuit which is used to operate the switch))(AAPA: page 4 paragraph 9 (control terminal 36 senses the level of output power from photodetector DA)).

With respect to claims 7 and 16, AAPA in view of Dion disclose the receiver of claim 1, wherein the photosensitive device is one of a photodiode or phototransistor (Dion: column 5 lines 51-52 (light impinging upon diode))(AAPA: page 4 paragraph 9 (control circuit senses the level of output power from photodiode D1)).

With respect to claims 8 and 17, AAPA in view of Dion disclose the receiver of claim 1, further comprising an inductance (AAPA: T1, Fig 1)(AAPA: page 3 paragraph 9 (transformer)) connected between the photosensitive device (AAPA: D1, Fig 1) and the first amplifier stage (AAPA: A1, Fig 1).

With respect to claims 9 and 18, AAPA in view of Dion disclose the receiver of claim 3, wherein the control circuit controls the switches to provide a maximum power to noise ratio for the optical receiver at any level of output power of the photosensitive device. On page 2, paragraph 5-6 applicant states that dynamic range is the difference between input and output power points at which the NPR is identical and that an increase in dynamic range leads to an increase in NPR. The invention as disclosed by Dion is specifically devoted to maximizing dynamic range of the receiver by switching between two modes for low and high power (column 2 lines 28-34 (increase the dynamic range))(column 1 lines 48-52). This is the same approach used by the applicant in the claimed invention (pages 2-3 paragraph 7 (at very low and very high

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optical power, the receivers NPR dominates the systems NPR...what remains is the gain and attenuation approach to obtain optimum performance for both high and low power conditions)).

With respect to claims 10 and 19, AAPA in view of Dion disclose the receiver of claim 1, wherein the second attenuator is a fixed attenuator (Dion: 19, Fig 1)(Dion: Resistor 19 switched into and out of the circuit is constant (column 2 lines 28-29)).

With respect to claim 11, AAPA in view of Dion disclose the receiver of claim 1, wherein an RF signal is provided at the output terminal of the optical receiver (AAPA: Fig 1 (RF output shown exiting the final amplifier A4)).

With respect to claim 21, AAPA in view of Dion disclose the method of claim 12, further comprising the act of applying an analog optical signal to the photodetector (AAPA: page 3 paragraph 8 (Therefore, in analog systems in order to support large power variations of the gain portions for an optical receiver, matched attenuators are connected between the RF amplifier stages, see Figure 1)).

With respect to claim 22, AAPA in view of Dion disclose the method of claim 12, further comprising the act of amplifying the input signal from the photodetector prior to the act of coupling the input signal to either amplify or attenuate (AAPA: amplified at initial amplifier A1 in Figure 1 prior to control circuit applications).

***Allowable Subject Matter***

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4. Claims 6 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents are cited to further show the state of the art with respect to high dynamic range optical analog receivers in general:

U.S. Patent No. 6,545,537 is cited to disclose an AGC optical receiver

U.S. Patent No. 4,353,100 is cited to show switchable resistors/amplifiers

U.S. Patent No. 4,771,449 is cited to show switchable resistors/amplifiers

U.S. Patent Application Publication No. 2003/0063354 is cited to show switchable receiver paths in an optical receiver

U.S. Patent No. 6,690,506 is cited to show control architecture for optical amplifiers

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Malkowski whose telephone number is (571) 272-5505. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KJM 7/21/06



KENNETH VANDERPUYE  
SUPERVISORY PATENT EXAMINER